

CLAIMS:

1. A method of effecting a smooth transition between adjacent digital information bursts transmitted in different modulation formats, the method comprising:
 - selecting a first code sequence for a first digital symbol burst to be transmitted, which first sequence comprises a set of end symbols with a first particular symbol pattern;
 - selecting a second code sequence for a second digital symbol burst to be transmitted after the first digital symbol burst, which second sequence comprises a set of start symbols with a second particular symbol pattern;
 - modulating the first digital symbol burst in a first modulation format;
 - modulating the second digital symbol burst in a second modulation format different than the first modulation format; and
 - transmitting the modulated first and second digital symbol bursts, the transmission of the second digital symbol burst starting upon completion of the transmission of the first digital symbol burst at an instant so selected that transmission of the end set of bits of the first code sequence is synchronized in time with the start set of bits of the second code sequence.
2. A method as claimed in claim 1, wherein the instant is a point in time where the first particular symbol pattern and second particular symbol pattern are closely matched according to one or more criteria.
3. A method as claimed in claim 2, wherein:
 - the first and second digital symbol bursts each have a respective amplitude and phase;
 - and the criteria comprise a close match between at least one of the amplitude of the first and second symbol bursts and the phase of the first and second symbol bursts.
4. A method as claimed in claim 2 or 3, wherein:

the amplitudes of the first and second symbol bursts each have a respective rate of change; and

the criteria comprise a close match between the rate of change in amplitude of the first and second symbol bursts.

5. A method as claimed in any preceding claim, wherein the first and second code sequences are transmitted such that at least one bit of the end set of symbols of the first sequence is transmitted in a guard period between the first and second sequences, and at least one symbol of the start set of the second sequence is transmitted in the guard period.
6. A method as claimed in any preceding claim, wherein the first digital symbol burst comprises information representing a voice signal.
7. A method as claimed in any preceding claim, wherein the second digital symbol burst comprises information representing a data signal.
8. A method as claimed in any preceding claim, wherein the first digital symbol burst is modulated in a Gaussian Minimum Shift Keying (GMSK) modulation format.
9. A method as claimed in any preceding claim, wherein the second digital symbol burst is transmitted in an 8-ary phase shift keying (8PSK) modulation format.
10. An apparatus for effecting a smooth transition between adjacent digital information bursts transmitted in different modulation formats, the apparatus comprising:
 - means for selecting a first sequence for a first digital symbol burst to be transmitted, which first sequence comprises a set of end symbols with a particular symbol pattern;
 - means for selecting a second sequence for a second digital symbol burst to be transmitted after the first digital symbol burst, which second sequence comprises a set of start symbols with the particular symbol pattern;

means for modulating the first digital symbol burst in a first modulation format and for modulating the second digital symbol burst in a second modulation format different than the first modulation format; and

means for transmitting the modulated first and second digital symbol bursts, the transmission of the second digital symbol burst starting upon completion of the first digital information symbol at an instant so selected that transmission of the end set of bits of the first code sequence is synchronized in time with the start set of bits of the second code sequence.

11. An apparatus as claimed in claim 10, wherein the means for transmitting the modulated first and second digital symbol bursts is arranged to transmit the first and second sequences such that at least one bit of the end set of symbols of the first sequence is transmitted in a guard period between the first and second sequences, and at least one symbol of the start set of the second sequence is transmitted in the guard period.
12. An apparatus as claimed in claim 10 or 11, wherein the first digital symbol burst comprises information representing a voice signal.
13. An apparatus as claimed in claim 10, 11 or 12, wherein the second digital symbol burst comprises information representing a data signal.
14. An apparatus as claimed in any of claims 10 to 13, wherein means for modulating is arranged to modulate the first digital symbol burst in a Gaussian Minimum Shift Keying (GMSK) modulation format.
15. An apparatus as claimed in any of claims 10 to 14, wherein the means for modulating is arranged to modulate the second digital symbol burst in an 8-ary phase shift keying (8PSK) modulation format.
16. A method of effecting a smooth transition between consecutive sequences of digital information transmitted in different modulation formats, the method comprising:

selecting a first sequence of digital information to be transmitted with a first phase and a first amplitude in a radio signal;

selecting a second sequence of digital information to be transmitted with a second phase and a second amplitude in the radio signal;

transmitting the first digital information burst in a first modulation format; and

transmitting the second digital information burst in a second modulation format different than the first modulation format, the transmission of the second sequence starting before completion of the first sequence at an instant so selected to minimize the respective differences between the first and second phases and the first and second amplitudes

17. An apparatus for effecting a smooth transition between consecutive sequences of digital information transmitted in different modulation formats, the apparatus comprising:

means for selecting a first sequence of digital information to be transmitted with a first phase and a first amplitude in a radio signal and for selecting a second sequence of digital information to be transmitted with a second phase and a second amplitude in the radio signal; and

means for transmitting the first digital information burst in a first modulation format, and transmitting the second digital information burst in a second modulation format different than the first modulation format, the transmission of the second sequence starting before completion of the first sequence at an instant so selected to minimize the respective differences between the first and second phases and the first and second amplitudes

18. An apparatus for processing digital symbols prior to transmission of the symbols in two different modulation formats, the apparatus comprising;

means for selecting from a set of symbols some of the symbols for modulation in a first modulation format and for selecting others of the symbols for modulation in a second modulation format different than the first modulation format;

means for modulating the said some symbols in accordance with the first modulation format and for modulating the said others of the symbols in accordance with the second modulation format;

and means for outputting the symbols as bursts for transmission, in which outputting means the burst of symbols in the first modulation format is separated from the burst of symbols in the second modulation format by a guard period comprising guard symbols that include at least one end symbol of the burst of symbols in the first modulation format and at least one symbol of the burst of symbols in the second modulation format.

19. An apparatus as claimed in claim 18, wherein the outputting means comprises a look-up table contains information regarding combinations of end symbols of the first modulation format start symbols of the second modulation format, and relative timings of the start and end symbols, the apparatus further comprising:
means for conditioning the symbols prior to transmission, which conditioning comprises introducing an advance or a delay to either or both of the burst of symbols in the first modulation format and the burst of symbols in the second modulation format depending on the timing information in the look-up table.
20. An apparatus as claimed in claim 18 or 19, wherein the conditioning means comprises:
an interpolator for interpolating the symbols; and
a pulse shaping filter for shaping the symbols prior to transmission.
21. An apparatus as claimed in claim 18, 19 or 20, wherein the means for modulating comprises a first modulating path for modulating the said some symbols in accordance with the first modulation format and a second modulating path for modulating the said others of the symbols in accordance with the second modulation format.
22. An apparatus as claimed in claim 21, wherein each modulation path comprises:
a modulator for modulating the symbols in the respective one of the first or second modulation format; and
a buffer for buffering the modulated data from the modulator.

23. An apparatus as claimed in claim 22, wherein the outputting means comprises a selector for selecting symbols from the in the first modulation path or from the buffer in the second modulation path.
24. An apparatus as claimed in any of claims 18 to 23, further comprising a radio modulating means for placing the burst of output symbols onto a radio frequency carrier for transmission.
25. A method or an apparatus substantially as described herein with reference to the accompanying drawings.